# MARICOPA COUNTY SPECIAL PROVISIONS
## FOR
## INSTALLATION OF UNDERGROUND UTILITIES

I. SPECIFICATIONS AND DETAILS

All work and materials shall conform to the "Maricopa Association of Governments (MAG) Uniform Standard Specifications for Public Works Construction", with adopted Maricopa County Department of Transportation (MCDOT) supplements thereto, except as modified by these Special Provisions. In case of conflict between the Uniform Standard Specifications, MCDOT Supplements and the Special Provisions, these Special Provisions shall govern.

The construction site shall be in accordance with all applicable OSHA regulations.

Other agency specifications for construction material or methods which are equal to or better than the MAG Uniform Standard Specifications, may be substituted as satisfactory alternates only with prior written approval of the County Engineer.

Engineering reports and laboratory tests may be required by the County Engineer to substantiate alternate materials or specifications at no cost to Maricopa County.

II. PLANS, SPECIFICATIONS, ENGINEERING

A. Preparation of plans, specifications, construction and inspection shall be performed under the supervision of a civil engineer, registered in the State of Arizona and employed by the owner. Plans prepared by utility companies for distribution of gas, electric power or for communication service need not be prepared by a registered Civil Engineer, but, shall be inspected by the utility company for compliance with MAG and MCDOT requirements.

B. Plans shall be submitted on a maximum size sheet of 24" x 36" and must be neat, clear, legible and complete in all respects. The scale shall be commensurate with the detail and in no case smaller than 1" = 200' plan, and 1" = 5' profile. Profiles will be required on projects involving installation of sewer, effluent, water, and underground irrigation lines in dedicated right-of-way. Power facilities must also be submitted in profile where the trade size of a single conduit exceeds six inches (6") in diameter or where multiple conduits including the concrete encasements are sixty (60) square inches or greater in cross-sectional area. In addition, profiles may be required by the County Engineer in cases of possible alignment or grade conflicts, cover problems or crossing conflicts. Plans may be submitted concurrently with the application for a construction permit but at least ten (10) working days will be required for review.

The County may require submission of a set of "as-built" plans, if any field changes were affected.

III. EXCAVATION, BACKFILL, COMPACTION, LINE DEPTH AND TESTING

A. Excavation - All excavation shall conform to the requirements of Section 601 of the MAG Uniform Standard Specifications, except as modified in these Special Provisions. Attention is called to the necessary notification of all utilities (Blue Stake, telephone number 602-263-1100).

The maximum length of open trench shall not exceed 1,320 feet and shall not remain open for longer than 10 working days. Trenches across streets shall be completely backfilled within 3 working days after pipe laying. When steel plates

are used to bridge across a trench on streets with a posted speed of 35 MPH or greater, the steel plates shall be recessed into the asphalt to provide a smooth travel path.

B. Backfill Materials - Backfill shall be per MAG Section 601.4.3. When "select" material or "aggregate base course (ABC)" is substituted or specified, it shall conform to the applicable sections of the MAG Uniform Standard Specification.

Cement slurry backfill, in accordance with Section 728 of the MAG Uniform Standard Specifications, may be substituted for trenches within paved areas. It shall be placed to the bottom of the existing pavement layer, or two and one-half (2½ ) inches minimum from the surface, whichever is greater, and shall be properly plated until sufficiently set to accommodate traffic loads and allow for placement of the asphalt concrete surface. Cement slurry backfill may be used at other locations with prior approval from the County Engineer.

Backfill material for utility trenches in subdivisions shall be “aggregate base course (ABC).”

C. Compaction

1.
MINIMUM DENSITY REQUIRED

| Compaction Type | Location | From Surface to 2' Below Surface | From 2' Below Surface to 1' Above Top of Pipe | From 1' Above Top of Pipe to Bottom of Trench |
|---|---|---|---|---|
| I | Under any existing or proposed pavement, curb, gutter, sidewalk, or such construction included in the contract, or when any part of the trench excavation is within 2' of the above. | 100% granular 95% for non-granular | 95% | 95% |
| II | On any utility easement, street, road or alley right-of-way when any part of the trench excavation is more than 2' from the above. | 95% | 95% | 95% |
| III | Around any structure or exposed utilities. | 95% | In all cases | In all cases |

(1) Note: Where full-depth asphalt is placed on native material, the pavement subgrade shall be compacted to100%.

2. For trenches in unpaved alleys, utility easements or other unimproved traveled way; water jetting (as defined in MAG Specifications and herein) is permissible.

3. Water consolidation by jetting shall be accomplished with a 1-½" pipe of sufficient length to reach the bottom of the lift being settled with adequate hose attached and a water pressure of not less than 30 psi. Lifts shall not exceed six feet (6') loose. The backfill shall be leveled, the trench saturated and the material jetted to:

   a. Within one foot (1') of the pipe if the lift is six feet (6') or less from the top of the pipe, or

   b. At least one foot (1') into the previous lift if multiple lifts are necessary.

All jetting shall be accomplished transversely across the trench at intervals of not more Than five (5) feet with the jetting locations on one side of the trench, offset to the jetting locations on the other side of the trench. The entire lift shall be leveled and completely saturated working from top to bottom. Each lift shall be tested and pass required compaction test(s) prior to any more fill or lifts being added to the trench.

4. Water jetting is permitted in new subdivision, but no paving will be permitted over water settled trenches until compaction test results have been approved by the County Engineer.

D. Minimum Depth of Lines

| Type | Minimum Depth ** | |
|---|---|---|
| 1. Direct Bury Cable | 36 * | |
| 2. Water Line in Major Street or > 12" Diameter | 48" | |
| 3. Other Water Lines or Irrigation Lines | 36" | |
| 4. Storm Drain Lines | 18" | |
| 5. Fiber Optic Cable | 36" | # |
| 6. Other, television, telephone, cable | 36" | |
| 7. Gas | 36" | |

* When installed a minimum of fifteen feet (15') beyond the edge of roadway.
** Without protective cap.
# With warning tape, 60" depth when crossing or within fifteen feet (15') of roadway.

Cover is defined as the difference in elevation between the top of the line or pipe and the ultimate gutter grade of the roadway if paving will follow or to top of existing pavement.

For facilities outside the limits as defined in paragraph III.C.1, cover is defined as the difference in elevation between the top of the line or pipe and the natural or regraded ground surface, whichever is less.

E. Testing

1. Procedures

a. AASHTO T99, Method A – Maximum Density

b. AASHTO T191, T238 – Field Density

c. AASHTO T27 – Sieve analysis

2. Frequency

The tests shall be made at the locations and depths specified by the County Engineer or his representative. A minimum of one set of tests will be required for each four feet (4') of trench depth for trenches within two feet (2') of a paved road or back of curb. Otherwise, one set of tests will be required for each six feet (6') of trench depth.

The minimum number of passing tests per set anticipated for specification compliance may be estimated as follows:

a. Pavement cut crossing – one (1) set of tests per crossing (one test each direction).

b. Longitudinal pavement cuts or the edge of the trench within two feet (2') as previously explained – one set of tests per five hundred feet (500'), with one set of tests minimum per block.

c. All other locations – one set of tests per eight hundred feet (800'), with one set of tests minimum per block.

3. Tests shall be taken at four-foot (4') or six-foot (6') vertical increments in the same vertical plane. Copies of all test reports shall be identified as to project and location by the testing laboratory and forwarded to the MCDOT inspector, who shall forward one set of all test results to the Maricopa County Department of Transportation.

   The compaction test(s) shall meet required compaction prior to the installation of additional lifts of fill material and all lifts shall meet compaction prior to paving.

4. At his/her discretion, the County Engineer may order load tests performed to determine the suitability and adequacy of backfill, before placement of pavement. Such tests shall be performed with a vehicle, loaded to approximately an eighteen thousand (18,000) pound axle load. Movement or settlement of backfill shall be cause for rejection of the work by the County. Load retest and corrective measures as necessary shall be at the expense of the owner or contractor.

IV. PAVEMENT CUTTING, PAVEMENT RESTORATION & BORING

A. All cuts in asphalt or concrete pavement shall have saw cut or neat and straight edges. All transverse or diagonal pavement cuts shall extend at least one foot (1') beyond each side of the trench ("T" – Top). Excavated pavement material shall be removed from the site and properly disposed of.

B. Pavement cut replacement: The asphalt material used for replacement of pavement cuts shall conform to Section 710 of the MAG Uniform Standard Specification or as directed by MCDOT. The thickness of the pavement and aggregate base replaced shall be consistent with the thickness of the existing asphalt pavement and base but shall not be less than 2 1/2" AC or 6" ABC. Minimum thickness requirements for asphalt pavement and aggregate base shall be measured compacted to 100% maximum density for the material.

C. Pavement cuts shall conform to MAG Section 336. A polymer modified Slurry Seal shall be applied in accordance with Section 332 on all cuts when the total pavement cut length is greater than 600 feet.

D. All concrete replacement shall be Class A (3000 psi). No site batch concrete is allowed.

   The thickness of Portland Cement concrete pavement replacement shall be consistent with the thickness of the existing section, but in no case less than six inches (6"). The concrete shall be Class A, in accordance with MAG specifications. The existing pavement shall be trimmed to a neat edge and the joint shall be sealed in accordance with Section 729 of the MAG Uniform Standard Specifications to insure a proper bond between the existing and new pavements.

   It is required that all roadway crossing of lines four inches (4') in diameter or less be bored or pushed under pavement which is less than two years old (including surface treatment). If a pavement less than two years old is required to be cut to install an underground utility, approval of the Transportation Engineer shall be required and an "early cut fee" assessed. **Water boring is not permitted under a paved roadway.**

E. Surface Tolerance

The completed surface, when ready for acceptance, shall be thoroughly compacted, smooth and even, true to grade and cross-section, and free

from ruts, humps, depressions, or irregularities. When a 10-foot straightedge is laid on the finished surface and parallel or perpendicular with the centerline of the road, the surface shall vary in no place more than 1/8 inch from the lower edge of the straightedge.

No "burning or infrared heating" is allowed to lower pavement high points.

V. SURFACE RESTORATION OF GRAVELED OR EARTH SURFACE ROADS

The surface replacement for gravel surfaced roads shall be consistent with the existing surface material in place, and may consist of Select Material or ABC as directed by the County Engineer.

Fill placed on existing gravel surfaced roads or earth surfaced roads to obtain minimum allowable cover over the pipe or utility lines shall be placed to proper grade for the full widths of the existing roadway and shall be compacted and graded to the satisfaction of the County Engineer. Care shall be taken to avoid altering or impeding natural drainage and creating dust or maintenance problems that did not exist prior to work.

VI. MISCELLANEOUS

The contractor shall secure a permit from the Maricopa County Department of Transportation prior to start of any construction operations within County right-of-way. Three (3) sets of approved plans must be submitted with the application at least three (3) working days before work is scheduled to begin.

The permittee shall notify the property owner or resident of adjoining occupied property at least twenty-four (24) hours prior to disruption of access to the property, and at no time deny access to the property longer than eight (8) consecutive hours, and shall provide adequate means for crossings, if necessary.

The permittee shall notify the inspector twenty-four (24) hours prior to beginning any work or testing. The inspector will inform the permittee which stages of construction will require inspection.

The permittee is responsible for insuring the natural drainage is not impeded during and after construction. Stormwater management within the construction site is the responsibility of the permittee. Where required, the permittee shall obtain a National Pollution Discharge Elimination System (NPDES) General Permit and conform to all applicable requirements therein.

Traffic control shall conform to the "Maricopa County, Special Provisions for Traffic Control Under Permit," incorporated herein and made a part thereof. The permittee shall submit a traffic control plan for approval prior to start of work and is responsible for maintaining the site in a safe condition for workers and the public. Should it become necessary for Maricopa County to barricade or otherwise protect the site due to a hazardous condition, the permittee shall be responsible for all incurred costs.

Only rubber-tired equipment shall be used on pavement, except that crawler

equipment using street pads may be used.

Existing regulations, (namely Regulation II, Rule 20-A-3, of the Maricopa County Environmental Service, Bureau of Air Pollution Control), as applicable, shall be rigidly

observed and enforced. Water or approved dust palliative, in sufficient quantities, shall be applied during all phases of construction involving open earthwork to prevent the unnecessary discharge of dust and dirt into the air.

Oversize and overweight loads, as defined under Arizona Revised Statute, on county streets require a separate permit from MCDOT.

Compliance with the MAG 1991 Particulate Plan for PM-10, and all current revisions thereto, shall be the permittee's responsibility for any construction within the designated "Non-Attainment" area. A copy of this plan is available through the Maricopa County Department of Environmental Service.

During the course of work, the permittee shall maintain the work area in a clean and orderly condition. Excess excavation, debris, etc., will not be permitted to accumulate on the road surface or shoulders. Work shall progress in such a manner that no condition, such as soft trenches, drop-offs from the edge of pavement, unnecessary lane restrictions, etc., will exist. Upon completion of installation, the permittee shall clean the pavement surface, pull and dress shoulders, replace traffic signs and otherwise put in order the entire work area to the satisfaction of the Transportation Director.